



United States Department of the Interior

GEOLOGICAL SURVEY
BOX 25046 M.S. 913
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

IN REPLY
REFER TO:

August 28, 1984

Mr. Seth M. Copeland, Section Leader
NTS Project Section
Repository Projects Branch (NMSS/NRC)
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. N. K. Stablein

Dear Mr. Copeland:

Enclosed, as requested, is a document "Index of USGS Geologic, Geophysical, Seismologic, and Surveying Data for NNWSI, Draft, August 1984." This document was assembled for NRC's use in preparation for the USGS Geologic Division data review scheduled for late September.

Yours truly,

Elmer H. Baltz
Geologic Division Coordinator, NNWSI

Enclosure

Copy (with enclosure) to:

- W. W. Dudley, USGS Coordinator, NNWSI
- W. E. Wilson, Chief, USGS Nuclear Hydrology Program
- Jerry Szymanski, WMPO/DOE/NV
- M. Glorra, WMPO/SAI

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INDEX OF USGS GEOLOGIC, GEOPHYSICAL, SEISMOLOGIC, AND
SURVEYING DATA FOR NNWSI

DRAFT, AUGUST 1984

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USGS DATA INDEX

REGIONAL GEOLOGY

Principal Investigator: Michael D. Carr

File Location: Menlo Park, Bldg. 7, Room 7268

<u>Category</u>	<u>Description</u>
1. Fault map of site vicinity	o Compilation showing ages of faults from published maps
2. Drill-hole UE 25pl	o Geophysical logs, core description, paleontologic data, fracture data
3. Geologic map of Bare Mountain	o Field maps, aerial photos
4. Regional geologic data	o Isotopic dates, thin sections

USGS DATA INDEX

REGIONAL GEOLOGY

Investigator: James C. Yount

File Location: Menlo Park, Bldg. 7, Room 4243

<u>Category</u>	<u>Description</u>
5. Dry Lake drilling	<ul style="list-style-type: none">o Kawich core samples, lithologic log, drilling logo Desert Dry Lake drilling log
6. Neotectonics	<ul style="list-style-type: none">o Trench logs, photos, fabric data, scarp-profile data, and miscellaneous maps

USGS DATA INDEX

REGIONAL GEOLOGY

Investigator: Florian Maldonado

File Location: Denver West Bldg. II, Room 231

<u>Category</u>	<u>Description</u>
7. Geologic maps of Bullfrog Quadrangle	<ul style="list-style-type: none">o Aerial photographso Compiled geologic mapo Rock samples, thin sections; modal analyses

USGS DATA INDEX

REGIONAL GEOLOGY

Investigator: David L. Hoover

File Location: Denver West Bldg. II, Room 236

<u>Category</u>	<u>Description</u>
8. Quaternary map of Yucca Mtn area	o Aerial photos and compiled map
9. Quaternary history of Yucca Mtn area	o Fortymile wash profile data and summarized climatic data

USGS DATA INDEX

REGIONAL GEOLOGY

Investigator: WC Swadley

File Location: Menlo Park, Bldg. 7, Room 7268

<u>Category</u>	<u>Description</u>
10. Surficial deposits of NTS region	o Geologic maps, aerial photos, and general field data
11. Quaternary faulting	o Trench diagrams, scarp profiles, and photographs in area of Yucca Mountain

USGS DATA INDEX

REGIONAL GEOLOGY

Investigator: Wilfred J. Carr

File Location: Denver West Bldg. III, Room 367

Category

12. Aerial photos
13. Data on drill-holes UH-1 and 2
14. Sketches of several trenches
15. Profiles of several fault scarps
16. Isotopic-age sample data
17. Paleontologic data
18. Quaternary-fault map compilation data
19. Miscellaneous geologic mapping
20. Compilation of site-vicinity map for Site Characterization Report
21. G.E. Program contract report on Death Valley-Furnace Creek fault zone
22. W. Gawthrop contract report on relocation of earthquake epicenters in
SW Great Basin

USGS DATA INDEX

REGIONAL GEOLOGY

Investigator: John W. Whitney

File Location: Denver West, Bldg. II, Room 325

<u>Category</u>	<u>Description</u>
23. Quaternary Faulting	<ul style="list-style-type: none">o Aerial photos of Yucca Mountaino Compilation of air photo lineamentso Published geologic and topographic mapso Field samples (surficial deposits)o Map showing compilation of faults around Yucca Mtn.

USGS DATA INDEX

SITE GEOLOGY

Principal Investigator: Richard W. Spengler

File Location: Denver West, Bldg. II, Room 203

<u>Category</u>	<u>Description</u>
1. Drill-hole locations	
2. Lithologic logs	
3. Drill holes	o Stratigraphic information and sampling information for UE 25a-1, a-4, a-5, a-6, a-7
4. Drill holes UE 25a-4, a-5, a-6, a-7	o Structural and stratigraphic analysis
5. Drill holes UE 25a-4, a-5, a-6, a-7	o Core samples and geophysical logs
6. Drill holes	o Palomagnetic and foliation data
UE 25a-4 through a-7	
UE 25b-1	
USW G-1 and G2	
USW G3/GU3	
USW G-4	
USW GA-1	
J-13	
USW H-1 through H-6	
7. Drill holes UE25b-1, USW G-4	o Updated versions of lithologic logs

8. Drill holes
 - UE25 H-1 and H-2
 - USW U2-1
 - UE25p1
 - UE25c-1 through C-3
 - USW-UH1 and UH2
9. Dominantly structural data and miscellaneous studies
10. General fracture data
 - o Geophysical and x-ray data from hydrologic drill holes
11. Computer operational procedure
12. Drill holes 25a-4, a-5, a-6, a-7
 - o TV-camera observation
13. Drill hole UE 25a-5
 - o Fracture and oriented core data
 - o TV-camera observations
14. Drill hole USW G-1
 - o Oriented-core data
 - o Original and revised fracture compilation
 - o Televiewer log
15. Acoustic-log data
16. Orientation diagrams of fractures from drill holes
17. Drill hole USW G-2
 - o TV observations
18. Drill hole USW-G3/GU3
 - o Fracture data from core
19. Drill hole UE 25b-1
 - o TV observations
20. Drill hole UE 25b-1
 - o Fracture data from core
 - o Preliminary surface fracture study near USW6-4
21. Drill hole USW-G4
 - o Petrographic studies and fracture studies

- 22. Drill hole USW-G4
 - o X-ray analysis
 - o Oriented core--bedding planes and fractures
 - o Fracture per unit volume
 - o Camera observations
- 23. Drill holes USW-G4, USW-G1, and UE25b-1
 - o Projection of shear fracture data to surface
- 24. Drill holes USW H-3 and H4
 - o TV camera observations
 - o Acoustic logs
- 25. Drill hole USW H-5
 - o TV camera observations
 - o Acoustic logs
- 26. Drill hole USW H-6
 - o TV camera observations
 - o Fracture analysis of core
- 27. Drill hole UE25 c-1
 - o TV camera observations
- 28. Drill holes WT-1 through WT-7 and WT-10 through WT-15
 - o TV camera observations
- 29. Yucca Mtn
 - o General stratigraphic information
 - o Attitudes of stratigraphic units
 - o Surface fracture study (F and S)
- 30. Hydrologic and WT holes
 - o Geophysical logs
- 31. Lithophysae
 - o Field studies
- 32. Yucca Mtn
 - o Paleomagnetic data
- 33. Drill holes
 - o Physical properties data

34. Yucca Mountain

- o Trench data
- o Surface geology
- o Photogrammetry
- o Aeromagnetism
- o Radioisotope study
- o Exploratory shaft

35. Drilling

- o Schedule
- o Criteria
- o Histories
- o Programs

36. Drill holes

- o Directional data
- o Fluid losses

37. Drill holes USW G-1 and G-4,
Ue25b-1, and UE25a-4 through a-7

- o Oriented-core data sheets

USGS DATA INDEX

SITE GEOLOGY

Investigator: C. C. Barton

File Location: Geologic Data Center, Mercury, Nevada,

USGS Office, map case

<u>Category</u>	<u>Description</u>
38. Pavement studies of fractures	o Unbound data sheets and maps
39. Fracture logging of drill hole USW G-4	o Unbound data sheets
40. Geologic map	o Map of area around drill hole USW G-4; unbound data sheets

USGS DATA INDEX

SITE GEOLOGY

Investigator: Robert B. Scott

File Location: Denver West Bldg. II, Room 208

<u>Category</u>	<u>Description</u>
41. Drill hole USW GU-3/G3	o Video tapes
42. Fractures	o Derivation of volume expression
	o Spacing along traverses at Calico Hills, Wren Wash, Split Wash, Coyote Wash, Abandoned Wash, Dead Yucca Ridge, Exploratory Shaft site
	o Calculations along traverses
	o Data on fractures in drill holes USW H-4 and H-5
43. Hydrofracs	o Data on drill hole USW G-3
44. Isotopic data	o Data on drill hole USW GU-3/G-3
45. Measured stratigraphic sections at Yucca Mtn	o Prow Pass, Tiva Canyon, and Topopah Spring Members
46. Slickenside data	o Results from Yucca Mtn mapping
47. Stratigraphic descriptions	o Subunits of Tiva Canyon Member
48. Drill hole USW GU-3/G3	o Core index
	o Criteria letter
	o Daily operations
	o Drilling program and reports
	o Fracture data from video camera

49. Fracture data

50. Ash flow tuffs

51. Yucca Mtn geology

52. Rock samples

- o F and S instructions and history
- o Data on hole deviation
- o Geophysical and others logs
- o Log of core; physical properties, photographs
- o Petrography and thin sections
- o From cores of drill holes USW GU-3/G-2, G-3, G-4
- o Chemistry of tuffs at Yucca Mtn
- o Aerial photographs of Yucca Mtn geology
- o Topographic maps and base maps
- o Mill copy of report on USW G-3/GU-3
- o Maps and cross sections
- o From drill holes USW G-3/GU-3, H-3, USW G-1, and VH-1, and from mapping
- o Thin sections and petrographic data

USGS DATA INDEX

SITE GEOLOGY

--ZEOLITE IN TUFF

Investigator: Richard A. Sheppard

File Location: Denver Federal Center, Bldg. 25, Room J1618

Various data sets under development to understand the distribution, genesis, and significance of the zeolite, mordenite, in tuffs of Yucca Mtn. Includes x-ray diffraction mineralogy of samples from core from drill holes USW-G1, G2, G4, and UE25b-1H; optical microscopy of thin sections and grain mounts; scanning electron microscopy; and electron microprobe analysis.

USGS DATA INDEX
REGIONAL GEOPHYSICS
--GRAVITY AND MAGNETICS

Principal Investigator: Howard W. Oliver
File Location: Menlo Park, Bldg. 2, Room 2274

<u>Category</u>	<u>Description</u>
1. Gravity field data	o Paper and tapes
2. Magnetic field data	o Paper and tapes
3. Station location and elevation control data	
4. Terrain correction data	
5. Rock sample data	

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REGIONAL GEOPHYSICS
--SEISMIC REFRACTION

Principal Investigator: Walter D. Mooney

File Location: Menlo Park, Bldg. 8, Rooms 8175, 7B34, 7B32

<u>Category</u>	<u>Description</u>
1. Topographic and orthophoto maps	o Seismic-recorder and shotpoint locations
2. Surveying readings and measurements	o List of laser-surveyed locations with field notes
3. Field data sheets	o Field notes containing: Blue Sheets-recorder locations Green Sheets-lat. and long. Map measurements o White Sheets-chronometer readings of seismic-recorders
4. Field data tapes	o Raw data on cassette tapes recorded in FM-Analog format
5. Digital data	o Reduced data: Seismic-recorder and shotpoint locations, chronometer corrections, digitized seismograms, first arrival travel times
a) Floppy discs	
b) Magnetic Tape	
6. Bibliography	o Publication of Analytical Results: USGS Open-File Report 83-588, Copy of calibration specifications

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SITE GEOPHYSICS

--BOREHOLE GEOPHYSICS

Principal Investigator: Douglas Muller

File Location: Denver West Bldg. II, Rooms 112 and 113

<u>Category</u>	<u>Description</u>
1. Geophysical logs	<ul style="list-style-type: none">o Paper copies of commercial logs--radiation, electrical, mechanical, temperature, sonic, seismic and miscellaneous. Located in room 113
2. Data tapes	<ul style="list-style-type: none">o Digital magnetic tapes of commercial log data--field tapes, back-up translated tapes, and library tapes. Located in room 113
3. Data files	<ul style="list-style-type: none">o Supporting data for geophysical log data reports--drilling histories, deviation surveys, core data, geologic data, and miscellaneous data. Located in room 113

4. Computer files

- o Computer and disc with data base of log data from Yucca Mountain containing raw data, refined data, and computed data. Located in room 112

5. Computer plots

- o Preliminary and final plots of computer log data for data reports

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SITE GEOPHYSICS

--BOREHOLE GEOPHYSICS

Investigator: Don L. Healy

File Location: Denver West Bldg. II, Room 112 and 114

<u>Category</u>	<u>Description</u>
6. Borehole gravity meter (BHGM) surveys	<ul style="list-style-type: none">o Strip charts of beam velocitieso Gamma-Gamma logso Field noteso Computer printouts of reduction calculations
7. Free-air gradient (FAG) surveys	<ul style="list-style-type: none">o Field sheetso Earth tides charto Tables of inner zoneo Terrain correction datao Reduction noteso Computer printouts of FAG calculations

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SITE GEOPHYSICS

--PETROPHYSICS

Principal Investigator: Lennart Anderson

File Location: Denver West Bldg. II, Room 119

<u>Category</u>	<u>Description</u>
1. Rock property analysis of core samples obtained from Yucca Mtn. boreholes UE25G-1, 4, 5, 6, and 7; UE-25P-1; USW G-3 and G-4	<ul style="list-style-type: none">o Data relating to laboratory measurements of natural bulk density, dry bulk density, saturated bulk density, grain density, porosity, natural state and saturated resistivity, induced polarization, compressional sonic velocity, hydraulic conductivity, magnetic susceptibility and remanent magnetizationo Material dealing with compilation, statistical processing, and interpretation of rock properties as they apply to radwaste isolation

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SITE GEOPHYSICS

--REFRACTION AND REFLECTION

Principal Investigator: Hans D. Ackerman

File Location: Denver West Bldg. II, Room 125

<u>Category</u>	<u>Description</u>
1. Reflection data	<ul style="list-style-type: none">o Well log datao Birdwell contractso Contracts of NTS data, exhibits 1 and 2o Reports on data collected
2. Refraction data	<ul style="list-style-type: none">o Velocity analysis from well logs at Yucca Mtno Well velocities from check shots and lithologic logs, maps, field sheets
3. SFAC 123 interpretation	<ul style="list-style-type: none">o Computations, horizons 1-4; manuscript
4. Deep refraction	<ul style="list-style-type: none">o Beatty processingo Crater Flats processingo BT Moon 4 processing

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SITE GEOPHYSICS

--MAGNETIC PROPERTIES OF TUFF

Principal Investigator: Joseph G. Rosenbaum

File Location: Denver West Bldg. II, Room 130

<u>Category</u>	<u>Description</u>
1. Rock and paleomagnetic data from drill holes in Yucca Mountain area	<ul style="list-style-type: none">o Remanent magnetization and susceptibility datao Copies of orientation data for oriented core runso Curie temperature determinationso Drill holes USW G-1, G-2, GU-3, G-3, VH-1 and VH-2
2. Rock and Paleomagnetic data from surface outcrops in Yucca Mountain area	<ul style="list-style-type: none">o Field notes for sampling locationso Maps showing locations of sampling siteso Remanent magnetization and susceptibility data

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SITE GEOPHYSICS

--TUFF STRENGTH

Principal Investigator: James Byerlee

File Location: Menlo Park, Bldg. 8, Room 8-B04

<u>Category</u>	<u>Description</u>
1. Initially intact samples	
a) Topopah Springs Member of the Paint Brush Tuff	o Stress-strain data
b) Bullfrog Member of the Crater Flat Tuff	o Stress-strain data
2. Sawcut Samples	
a) Topopah Springs Member of the Paint Brush Tuff	o Stress-strain data
b) Bullfrog Member of the Crater Flat Tuff	o Stress-strain data

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SITE GEOPHYSICS

--IN SITU STRESS MEASUREMENTS

Principal Investigator: Jack Healy

File Location: Menlo Park, Bldg. 8, Room 8190

<u>Category</u>	<u>Description</u>
1. Pressure-time records from hydrofracture test	o Chart paper, field notes
2. Pressure-time records from hydrofracture tests	o Field data and notes (pressure gage records)
3. Televiewer photos	o Original pictures o Geophysical logs o Core descriptions

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GEOCHRONOLOGY

Principal Investigator: John Rosholt

File Locations: Denver Federal Center, as noted below

Investigator: (Richard Marvin)

File location: Denver Federal Center, Tailer I and Bldg. 21,
Room A1003

<u>Category</u>	<u>Description</u>
1. K-Ar dating	<ul style="list-style-type: none">o Dating request letter fileo Sample-information-sheet fileo Potassium-analyseso Argon-extraction notebooko Argon-analyses fileo K-Ar age report file

Investigator: John N. Rosholt

File Location: Denver Federal Center, Bldg. 15, Room 107

<u>Category</u>	<u>Description</u>
2. Uranium-trend dating	<ul style="list-style-type: none">o Dating request letter fileo Alpha-spectrometry measurement datao Data bank storage recordso Isotopic concentration and composition

- o Uranium-trend plots
- o Age result tables
- o Final reports

Investigator: Barney Szabo

File Location: Denver Federal Center, Bldg. 15, Room 105

- 3. Conventional U-series dating
 - o Alpha spectrometer measurement data
 - o Data bank storage records
 - o Isotopic concentration and composition
 - o Tables of calculated age results
 - o Interpretation of data and final reports

Investigator: C. A. Bush

Field Location: Denver Federal Center, Bldg. 15, Room 107

- 4. Gamma Ray spectrometry
 - o Gamma-spectrometry computer interpretation data
 - o Tables of radioelement concentration and ratios
 - o Final reports

Investigator: C. W. Naeser

File Location: Denver Federal Center, Bldg. 15,

Rooms 158-160

<u>Category</u>	<u>Description</u>
5. Fission-track dating of zircon and apatite	<ul style="list-style-type: none">o Dating request letter file, room 158o Analytical data kept in laboratory notebooks, room 160o Age report file, room 158

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SEISMOLOGY

--TELESEISMIC P-RESIDUAL STUDY

Principal Investigators: Mahadeva Iyer and John Evans

File Location: Menlo Park, Bldg. 8, Room 8211

<u>Category</u>	<u>Description</u>
1. Field documentation	<ul style="list-style-type: none">o Field rates describing recorder operation (4 books)o Field maps showing location of portable stations
2. Field seismic recordings	<ul style="list-style-type: none">o "Five-day recorder" 1/2 inch analog tape reels (15 inch diameter)o "Sprengnether DR-100" digital cassette tapes
3. Copies of SGB network tapes	<ul style="list-style-type: none">o 1/2 inch computer tapes
4. Processed-data tapes	<ul style="list-style-type: none">o 1/2 inch computer tape containing selected digitized data from "5-day recorders"o 1/2 inch computer tape (UNIX "TAR" tapes) containing process digital seismograms, picks and related data

5. Notebooks

- o General information notebook
- o "WAT" hardcopy notebook, final visual records of seismograms and picks
- o "Distazkes" printed output binder

6. Software

- o Program listings binder

7. Computer files

- o Pick times (archive of pick time files)
- o "Distazkes" punched output file

USGS DATA INDEX

SEISMOLOGY

--SEISMICITY OF SOUTHERN GREAT BASIN

Principal Investigator: A. M. Rogers

File Location: Room 436, 1711 Illinois, Golden, Colorado

<u>Category</u>	<u>Description</u>
1. Earthquake catalogs	<ul style="list-style-type: none">o Historical catalog through July 1978o SGB Network catalog from August 1978 to the presento Network catalog includes events from 114.5° to 118.0° W. and from 35.6° N. to 38.5° N.
2. Develocorder film inventory Films at 450 Orchard St., Lakewood, Co.	<ul style="list-style-type: none">o Films of SGB network station data continuously recorded from from Aug. 1978 to present
3. Event tapes	<ul style="list-style-type: none">o Local, regional, and teleseismic magnetic tapes containing SGB digital seismograms from October, 1981 to the present for local eqs, and from Feb. 1982 to present for regional and teleseismic eqs
4. Earthquake computer codes	<ul style="list-style-type: none">o Real-time event detection of PDP 11/34o Event location, focal

- mechanism, coda-wave analysis,
spectral analysis codes and
data
 - o Attenuation programs and data
 - o Velocity inversion programs
 - o P-wave first motions have been
computer-plotted for about 80
percent of the local SGB eqs
from Jan. 1982 to the present
 - o Information on blasting on
Yucca Mtn. has been obtained to
distinguish small blasts from
legitimate earthquakes near the
proposed repository site
 - o Computer mag tapes of
aftershock and collapse
seismicity following nuclear
detonations at Yucca Flat,
Pahute Mesa, and Rainier Mesa
 - o Fortran and "C" source codes
for all detection and analysis
programs in use
 - o Synthetic seimograms
 - o Data from statistical
regressions to determine
attenuation and amplitude-
distance relations for SGB
earthquakes
5. Earthquake first-motion data
6. Yucca Mountain events
7. Other tape archives

8. Publications

- o 1980 Data Report and
Preliminary Analysis
- o 1981 Data Report and
Preliminary Analysis

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GEODETIC SURVEYS

Principal Investigator: Will Prescott

File Location: Menlo Park, Bldg. 8, Room 8226

<u>Category</u>	<u>Description</u>
1. Geodetic surveys by laser ranging	<ul style="list-style-type: none">o Network diagram for NTS surveyso Horizontal strain rates versus timeo Line lengths versus timeo Field data sheets for all line length observations (time, instrument readings, aircraft meteorologic data)o Computer printouts of all analyses of field data to obtain corrected line lengths and horizontal strain field increments

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STRAIN MEASUREMENTS

Principiapl Investigator: Tom Bray

File Location: Denver Federal Center, Bldg. 25, Room 1454-C

<u>Category</u>	<u>Description</u>
1. Level line	<ul style="list-style-type: none">o Field leveling datao Instrument collimation datao Abstracto Mark descriptions
2. Quadrilaterals	<ul style="list-style-type: none">o Distance recordso Leveling datao Vertical angle recordso Instrument Calibration data
3. Summary	<ul style="list-style-type: none">o A summary of the 1983, 1983-84 quadrilateral and level-line results

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CORE LIBRARY

Investigators in charge: Gary L. Dixon and M. H. Hait

File Location: Geologic Data Center, Mercury, Nevada

<u>Category</u>	<u>Description</u>
1. Core Index Location: Bldg. 158	o Samples (core, waxed core, cuttings, and sidewall) cataloged by sample type, intervals taken, lab, geologic location
2. Daily operations Location: File #6, Bldg. 158	o Present activity by hole
3. Drill holes (all NNWSI holes) Location: File #7, Bldg. 158	o Example: USW G-1 *Document Contents Example: Core Index Daily Drilling Program Drilling Reports Field Service Reports Fracture Analysis Hole History Open File Report Lithology Samples Logged In Samples Shipped Specialist Log Surface Geology

Time Logs

Waxed Samples

Whipstock

Work Orders

4. Films
 - Location: File #8, Bldg. 158
 5. Geophysical Logs
 - Location: Bldg. 158
 6. Open Files
 - Location: File #6, Bldg. 158
 7. Photographs
 - Location: File #8, Bldg. 158
 8. QA Files
 - Location: File #6, Bldg. 158
 9. QA Index
 - Location: Bldg. 158
 10. Samples
 - Location: Bldg. 156
 11. Video cassettes
 - Location: File #8, Bldg. 158
- o Oriented Cores
 - o Records physical Properties of Rock Material being logged.
Examples: Caliper, density, temperature log, etc.
 - o Reports of drill holes
 - o Core samples from beginning interval to T.D.
 - o QA procedure manuals, 3 volumes, QA memos by Labs, etc.
 - o Indexes holes, documents contained and locations
 - o Core (waxed) cutting and sidewall cores
 - o 1" tape of down hole operations

*Contents depend on hole criteria